

*L. cf. subcinnamomea*

N AMERICA. Michigan, Jackson Co., Waterloo Recreation area, 6 ix 1965, on roadside, Watling 1469A/1742C.

*L. velutina*

EUROPE. England & Scotland: Norfolk, Hedenham Wd, 24 x 1971, Orton 4168 (Fig. 1D); Yorkshire, Bishop Wd, 26 ix 1971, pathside in mixed woodland, Watling 8991; Midlothian, Edinburgh, Royal Bot. Gdn, 9 vi 1974, ex J. A. Ratter, Watling 11107; Sutherland, Strathmore, 19 ix 1972, in old limestone quarry on muddy soil, Watling 9365. Finland: Ruissalo, nr Turku, 24 viii 1971, on pathside, Watling 8374. Germany: nr Sonnerwalde, vii 1845, ex Kritschmar, Herb. W. Evans.

N AMERICA. Maryland, Catocin Mountain Park, Thurmont, 12 x 1969, roadside nr parking lot, ex H. Burdsall, Watling 6223 (as *Ps. rigidipes*)—2 collections; Michigan, Jackson Co., Winna Wonna Lake, 2 ix 1965, on old stump, ex A. H. Smith, Watling 1368A/1668C.

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## BOOK REVIEW

**A Family Identification Pocketbook.** After many years out of print, Davis & Cullen's little book makes a welcome reappearance in a completely revised second edition.\* As in the original edition the work 'attempts to provide a means of identification for all Angiosperm families native or cultivated, out-of-doors or under glass, in north temperate regions' (the southern limit being taken as 30°N). Extensive revision of most of the text has been made to take into account the changes in accepted classification which have taken place in the fifteen years since the original version appeared and to amplify various sections. The key itself has been changed from the indented type to the bracket form generally more popular with students and the total number of families which key-out has been increased from 260 to 272.

A notable feature of the book is a 13-page section on usage of terms to ensure that the keys are correctly used. Here a concise treatment of hypogyny, perigyny, epigyny, placentation and aestivation is given with the support of an abundance of good figures. In dealing with the relationships of floral parts the authors diverge somewhat from the classical view, and indeed they provide a table comparing their usage with that of the older literature. Their usage is unambiguous and practical, although it jars on those whose floral morphology has a traditional basis to find the corolla and androecium of *Primula* described as borne on a perigynous zone and those of *Viburnum* on an epigynous zone (since in all cases the zone below the insertion of epipetalous stamens is treated as an area of adnation rather than as true corolla).

Also preliminary to the keys are sections on examining the plant (running through what to observe for all characters) and use of the key itself. Both of these are extremely valuable to students, who can in fact learn a great deal of useful information from the 24 initial pages of this book.

The keys themselves are strictly dichotomous and bring out the families in 13 groups (followed by keys to the segregate families of Saxifragaceae *s.l.* and Liliaceae *s.l.*). We put the keys to the test with 24 species chosen to give a reasonable range of families and also to include a number of difficult examples. Of this total three species (belonging to *Greyia*, *Lantana* and *Streptocarpus*) failed to track out, in all cases because their placentation was not as stated, while the great majority of others ran through very smoothly indeed: such a level of success speaks highly for keys of so all-encompassing a nature. Our findings were confirmed by the experience of the first-year students of the Diploma in Horticulture (Edinburgh) course who, although taxonomically inexperienced, have found the keys easy and accurate in use.

Following the keys, terse descriptions are given of all families apart from the segregates of Saxifragaceae and Liliaceae *s.l.* The families and orders are listed within the ten super-orders used in Stebbins's classification; this represents one of the revisions of this edition as in the previous the informal groups of Benson's older system were used. In dealing with a small number of families the authors have deviated from Stebbins's system and these are clearly indicated in a table.

The book ends with a short section on further identification, giving the student a very useful bibliography for this purpose, and a concise glossary.

It is difficult to find any points to criticize in this practical little book. It forms an admirable complement to the recently published *Flowering Plants of the World* (V. H. Heywood ed.) reviewed on p. 339; both works use Stebbins's system of classification and Davis & Cullen supplies the keys for identification while Heywood gives family descriptions and beautiful illustrations. *Flowering Plants of the World* has been described as 'the botanical bargain of the year': the same can hardly be said for *The identification of flowering plant families*—the hardback version costs £6, no mean price for a pocketbook of 113 pages (the first edition cost 12s 6d in 1965); fortunately the paperback version represents better value at £1.95.

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\* *The identification of flowering plant families* (2nd edn) by P. H. Davis & J. Cullen. 113 pages, 8 figs. 1979. Cambridge University Press. Price £6 (hardback), £1.95 (paperback).

## GEORGE JOHNSTON'S LICHEN HERBARIUM AT THE R.B.G., EDINBURGH

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**ABSTRACT.** A folder of lichens assembled by George Johnston of Berwick has been rediscovered and its contents revised and cross-referenced to his published works. A short biographical account of Johnston is given with emphasis on his lichenological activities.

Dr George Johnston (1797–1855), founder of the Berwickshire Naturalists' Club and the Ray Society, three times mayor of Berwick and for nearly 40 years a medical practitioner in that town, was an all-round naturalist of outstanding ability. After completing his medical qualifications (1824) he divided his working time between his patients and a study of natural history. His first publication was *A Flora of Berwick-upon-Tweed*; Vol. 1 (1829) of which deals with higher plants and Vol. 2 (1831) with cryptogams. It covers the County of Berwickshire, the area of north Northumberland which in those days was known as North Durham, and the Cheviot Hills. Shortly after this Flora was published his interest turned to marine invertebrates on which he became a world expert. Research into invertebrate zoology dominated his scientific work during the 1830s and 1840s but he maintained an interest in botany and in 1853 published the first volume (botanical section) of a work on *The Natural History of the Eastern Borders* which brought his earlier Flora up to date. Unfortunately he died when only 58 so the subsequent volumes were never published. He was survived by his wife, who had illustrated his first Flora, and four children. Further biographical details are given by Hardy (1892), Embleton (1856), Yonge (1955) and Welford (1895).

It is not known when Dr Johnston's interest in lichens was first aroused but it is likely that he became familiar with all groups of plants at an early age. Though in no way a dedicated lichenologist his importance is that he was the first person to investigate the lichens of the Berwick-upon-Tweed area from which he had by 1831 recorded 83 species.

The Winch correspondence (LINN) contains a letter from Dr Johnston dated 18.2.1830 that clearly accompanied a parcel of lichens and so it is quite likely that N. J. Winch, who lived on Tyneside, may have given him encouragement. Indeed, the 1829–31 Flora is dedicated to Winch who is thanked in the preface for refereeing material. Later, Johnston's zoological studies left him little time for lichens as this extract from a letter to J. Hardy dated 29.2.1840 (Hardy, 1892) shows:—

"I am quite aware of the incompleteness of my list of Berwickshire lichens and would be glad had I the leisure to join you in their investigation . . . as I do not despair of sometime or other returning to these pets of flora I would be particularly obliged by your keeping and preserving specimens of all you may gather for me."

This letter may have spurred Hardy, who had a great admiration for Johnston, into collecting the material and records which were published 23 years later as *The Lichen Flora of the Eastern Borders* (Hardy, 1863).

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Dr Johnston is known to have accumulated a lichen herbarium as Hardy (1863) refers to it and it was consulted by Leighton in the preparation of *A Monograph of British Graphideae* (1845) and his British lichen Flora (see Leighton, 1872: vii). However, its whereabouts was unknown until it was recently found in a cupboard at the Royal Botanic Garden, Edinburgh (E). It comprises 96 sheets bound in a folder with "IV Lichens" on the spine. The title page is inscribed "*The Lichens of Berwickshire and North Durham, G. Johnston, 1831*" in the doctor's bold hand. Little information is given on localities or dates, but the arrangement exactly matches that in the 1831 Flora to which the specimens are cross referenced by page numbers, thus enabling one to check Dr Johnston's species concepts against those of today and greatly increasing the value of the records of his floras. As Dr Johnston only collected in the Berwick area it is safe to assume that the localities in the flora are those from which the specimens came and that they mostly date from around 1831. The last 11 specimens in the herbarium are better documented and mostly support additional records in his 1853 flora; the majority of them were contributed by the Rev. Thomas Brown (minister of Langton). The sheets bear the occasional annotations by Leighton and Hardy.

According to Desmond (1977) the whereabouts of Johnston's herbarium is unknown, though Hedge and Lamond (1970) state that at least some of his flowering plants are in E. Letters in a file in the Edinburgh Herbarium pertain to the acquisition on permanent loan of the Berwick Herbarium from the Berwick-upon-Tweed Town Council in March 1943. However, it is possible that some of Johnston's material was removed prior to this date and remains lost. This may be the fate of his bryophytes, because they are only poorly represented in E. In addition to the folder of lichens, three folders of fungi and one of algae were found, each of which are cross-referenced to the 1831 Flora. The Berwick Herbarium, now at E, contains flowering plants collected by Phillip Maclagan (1818-1892) and a collection of *Salix* by Andrew Brotherton (1834-1891).

Examination of the herbarium has enabled us to confirm directly the past presence of many species in Berwickshire. This is a very underworked county for lichens and as the bulk of the lichen herbarium of the only other early collector, James Hardy, has almost certainly been destroyed, Dr Johnston's 150 year-old herbarium is of considerable importance. We have revised the material in the light of current taxonomic ideas: excluding purely nomenclatural changes, about a quarter of the approximately 100 specimens have been re-determined. The list below gives the correct names and could be used to amend Dr Johnston's Floras.

Compared with the lichen flora of south-east Scotland today many of the preserved specimens appear surprisingly luxuriant and many normally shy-fruited species are represented by fertile material. A depression of fruiting followed by a reduction in luxuriance is in many cases the earliest sign of a lichen flora coming under stress from low levels of sulphur dioxide air-pollution.

Several of the species represented are apparently now very rare in south-east Scotland and Northumberland, being restricted to old undisturbed relic woodland owing to their intolerance of disturbance, low levels of sulphur dioxide, and agricultural chemicals. These species are the *Lobaria* spp., *Nephroma* spp. and *Sticta* spp., reported by Johnston from such localities

(with approximate national grid-references) as Penmanshiel Wood (36/76), woods above The Retreat (36/76), woods by River Dye above Longformacus (36/65), and Langton-Lees Cleugh (36/74-52). These woodlands are still extant and require careful study to establish the present status of their lichen floras.

The specimens of *Ramalina fraxinea* and *R. siliquosa* are notably luxuriant. Similar large specimens of the latter were seen by one of us (B.J.C.) on cliffs near the sea at Tynninghame in East Lothian in 1975.

*Leptogium plicatile*, found by Johnston on wet rocks at Hudshead (46/01·50) is a very rare species in Britain, but has been recently found in Northumberland, on rocks in the River North Tyne near Chipchase Castle, by Dr N. Holmes (specimen in E). The name *L. plicatile* (Ach.) Leight. has often been erroneously applied to a much commoner species of calcareous rocks (especially crumbling mortar of old walls) whose correct name is probably *L. turgidum* (Ach.) Cromb.

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